

IN THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 13. This sheet, which includes Fig. 13, replaces the original sheet including Fig. 13.

Attachment: Replacement Sheet

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-18 are presently pending in this application, Claims 19 and 20 having been withdrawn from further consideration by the Examiner, and Claims 1-3, 6, 8, 10, and 13-18 are amended. No new matter is added.

In the outstanding Office Action, the drawings were objected to because of informalities; Claims 1-18 were rejected under 35 U.S.C. §112, second paragraph, for being indefinite; Claims 1-18 were rejected under 35 U.S.C. §101 for being directed to non-statutory subject matter; Claims 17 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ohkubo et al. (U.S. Patent 5,430,526) combined with Niimi (U.S. Publication 2002/0076633, hereinafter "Niimi '633"); Claims 17 and 18 were rejected under 35 U.S.C. §102(e) as being anticipated by Niimi (U.S. Publication 2004-0033428, hereinafter "Niimi '428"); Claims 1, 2, 5, 7, 8, 10, 11 and 15-18 were rejected under 35 U.S.C. §102(e) as being anticipated by Sugino et al. (U.S. Patent 6,853,823); Claims 1, 2 and 4-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Niimi (U.S. Patent 2003-0104295, hereinafter "Niimi '295") combined with Sakai et al. (U.S. Publication 2001-0022343); Claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Niimi '295 combined with Sakai et al., further combined with JP 11-140337 (hereinafter "JP '337") as evidenced by Ladd et al., "Structure Determination by X-ray Diffraction", p. 426 (hereinafter Ladd et al.); Claims 1, 2, 5, 6-8, 10, 11 and 14-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Niimi '633 combined with Sakai et al.; Claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Niimi '633 combined with Sakai et al., further combined with JP '377, as evidenced by Ladd et al.; Claim 4 was rejected under

35 U.S.C. §103(a) as being unpatentable over Niimi '633 combined with Sakai et al., further combined with Niimi et al. (U.S. Publication 2002-0051654, hereinafter "Niimi '654"); Claim 9 was rejected under 35 U.S.C. §103(a) as being unpatentable over Niimi '633 combined with Sakai et al., further combined with Tokutake et al. (U.S. Patent 6,120,955); Claims 12 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Niimi '633 combined with Sakai et al., further combined with Niimi '654; Claims 1-16 were provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over Claims 1-37 of co-pending Application 10/665,155 in view of Sakai et al.; Claims 1-3, 5, 6 and 9-18 were provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over Claims 1, 2 and 5-19 of co-pending Application 10/454,556 in view of Sakai et al.; and Claims 1-3, 5, 6 and 10-18 were provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over Claims 1-24 and 29-35 of co-pending Application 10/944,614 in view of Sakai et al.

Regarding the objection to the drawings, the reference numbers 59 and 30 in the specification are amended to the reference number 50 and 19, respectively. These amendments are to correct the typographical errors, and therefore, no new matter is added. Further, Figure 13 has been corrected on the replacement sheets to delete the reference character 106. Thus, it is respectfully submitted that the objection to the drawings has been overcome.

Regarding the 35 U.S.C. § 112, second paragraph, rejection of Claims 1-18, Claims 1, 6, 8, 10, 13-18 are amended to clarify the claimed subject matter. The phrases "a surface of the electrophotographic photoconductor exposed by the light irradiator requires 200 msec or less to reach the developer" and "an exposure energy when the write light having a resolution

of 600 dpi or greater is irradiated from the light irradiator to the electrophotographic photoconductor is 5 erg/cm^2 or less on the surface thereof” recited in Claims 1 and 17 are amended to “a surface of the electrophotographic photoconductor exposed by the light irradiator is configured to reach the developer within 200 msec or less” and “the light irradiator is configured to irradiate with an exposure energy of 5 erg/cm^2 or less on the surface of the electrophotographic photoconductor when the write light has a resolution of 600 dpi or greater,” respectively, to clarify that Claims 1 and 17 are directed to apparatus, not methods of use of apparatus. The phrase “alternating superposed voltage is applied to the charger of the electrophotographic apparatus” recited in Claim 14 is amended to “the charger of the electrophotographic apparatus is configured to be applied alternating superposed voltage” to clarify that Claim 14 is directed to an apparatus, not a method of use of apparatus. The phrase “the write light is irradiated from the light irradiator at a resolution of 600 dpi or greater” recited in Claims 16 and 18 is amended to “the light irradiator is configured to irradiate the write light at a resolution of 600 dpi or greater” to clarify that Claims 16 and 18 are directed to apparatus, not methods of use of apparatus. Further, Claims 1, 6, 8, 10, 13 15 and 17 are also amended to address the informalities. Applicants note that the term “white light” is not recited in Claim 17. Thus, it is respectfully submitted that the 35 U.S.C. § 112, second paragraph, rejection has been overcome.

Regarding the rejection of Claims 1-18 under 35 U.S.C. §101, Applicants respectfully submit that the rejection has been overcome because, in Applicants’ view, Claims 1-18 are amended to direct to apparatus, not methods of use of apparatus, as discussed above.

Regarding the rejection of Claims 1-18 under 35 U.S.C. §102(e) and §103(a), Applicants respectfully submit that the rejection has been overcome because, in Applicants’

view, amended independent Claims 1 and 17 patentably distinguish over the applied references as discussed below.

Claims 1 and 17 recite “a surface of the electrophotographic photoconductor exposed by the light irradiator is configured to reach the developer within 200 msec or less” and “the light irradiator is configured to irradiate with an exposure energy of 5 erg/cm^2 or less on the surface of the electrophotographic photoconductor when the write light has a resolution of 600 dpi or greater.”

If the exposure energy is 5 erg/cm^2 or less in the electrophotographic apparatus having a conventional photoconductor, an amount of the generated carrier becomes small. This is shown with the line B in Fig.6. As a result of use of the conventional photoconductor, there may be a case where the image density decreases or one-dot image is not accurately developed. If the power of the light source is set larger (the exposure energy of more than 5 erg/cm^2) to solve this problem, the durability of the light source deteriorates due to the increased power of the light source, and therefore, the stability thereof also deteriorates after repeated use. Further, when a certain dot or line is written by irradiating a large light amount, a “line or dot thickening” phenomenon occurs (Specification at page 6, lines 5-6). Namely, the light-induced fatigue of the photoconductor increases, or enlarged dots are formed (or a line image is thickened). In an electrophotographic process at a resolution less than 600 dpi, this phenomenon did not draw attentions, but with a recent reduction in the beam diameter in order to improve resolution, the phenomenon has appeared eminently in an electrophotographic process at a resolution 600 dpi or greater (Specification at page 6, lines 7-11). On the other hand, although charge generation substances rarely exhibit a high gain in a short time of 200 msec or less as a time between exposure-development (Specification at page 6, lines 19-23), titanyl phthalocyanine crystal is a material capable of exhibiting such a

high gain. However, the “line or dot thickening” phenomenon is more marked in the photoconductor using the titanyl phthalocyanine crystals than in the photoconductor having a lower sensitivity (Specification at page 41, lines 2-5). Thus, when writing is conducted at a resolution of 600 dpi or greater and the time between exposure-development is 200 msec or less, the “line or dot thickening” phenomenon occur eminently unless the amount of a write light is adjusted properly, leading to a substantial deterioration in resolution (Specification at page 40, line 23 through page 41, line 10).

When the photoconductor having the light attenuation properties of the line A in Fig. 6, the attenuation of the light is substantially completed at the exposure energy of 5 erg/cm^2 as shown in Fig. 6. Therefore, the output of the light source can be set low so that the life duration and stability of the light irradiator can be improved and the “line or dot thickening” phenomenon can be suppressed. By attaining the photoconductor having the properties shown with the line A in Fig. 6, it becomes possible to reduce the surface potential of the unexposed parts, and to increase a margin for the background deposition which is a fatal defect in a negative or positive developing. Since the saturation amount of the potential attenuation exists in the range of the applicable light amount, a margin is given to the luminescent distribution within one-dot of the write light, which is advantageous for the formation of accurate latent images (Specification at page 39, lines 3-18).

Namely, the inventions recited in Claims 1 and 17 enable to suppress the “line or dot thickening” phenomenon by the light irradiator configured to irradiate with an exposure energy of 5 erg/cm^2 or less on the surface of the electrophotographic photoconductor when the write light has a resolution of 600 dpi or greater, the time between exposure-development is 200 msec or less, and the charge generation layer contains titanyl phthalocyanine crystals having, as a diffraction peak ($\pm 0.2^\circ$) of Bragg angle 2θ with respect to $\text{CuK}\alpha$ ray

(wavelength: 1.542 angstrom), a maximum diffraction peak at least at 27.2°, main peaks at 9.4°, 9.6° and 24.0°, and a peak at 7.3° as a diffraction peak on the lowest angle side, and not having a peak within a range of from 7.4° to 9.3°.

The outstanding Office Action asserts that Ohkubo et al., Sugino et al., Niimi '295 and Niimi '633 disclose that the charge generation layer comprises titanyl phthalocyanine crystals that exhibit an X-ray diffraction pattern having a maximum peak at a Bragg angle of 27.2°, a lowest peak at 7.3°, peaks at 9.4°, 9.6° and 24.0°, no peaks between 7.4° and 9.3°, and no peak at 26.3°. However, as suggested by the outstanding Office Action, Ohkubo et al., Sugino et al., Niimi '295 and Niimi '633 fail to teach or suggest “a surface of the electrophotographic photoconductor exposed by the light irradiator is configured to reach the developer within 200 msec or less” and “the light irradiator is configured to irradiate with an exposure energy of 5 erg/cm² or less on the surface of the electrophotographic photoconductor when the write light has a resolution of 600 dpi or greater” recited in Claims 1 and 17. Therefore, Ohkubo et al., Sugino et al., Niimi '295 and Niimi '633 fail to teach or suggest an electrophotographic apparatus which suppress the “line or dot thickening” phenomenon when the charge generation layer contains titanyl phthalocyanine crystals, the time between exposure-development is 200 msec or less, and the writing is conducted at a resolution of 600 dpi or greater. Accordingly, Claims 1 and 17 patentably distinguish over Ohkubo et al., Sugino et al., Niimi '295 and Niimi '633.

In addition, Niimi '428, Sakai et al., JP '337, Ladd et al., Niimi '654 and Tokutake et al. also fail to teach or suggest “a surface of the electrophotographic photoconductor exposed by the light irradiator is configured to reach the developer within 200 msec or less” and “the light irradiator is configured to irradiate with an exposure energy of 5 erg/cm² or less on the

surface of the electrophotographic photoconductor when the write light has a resolution of 600 dpi or greater” recited in Claims 1 and 17.

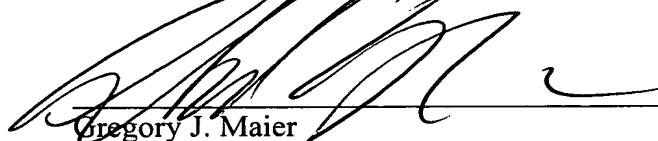
Accordingly, independent Claims 1 and 17 patentably distinguish over the applied references. Claims 2-16 and 18 are dependent from Claims 1 and 17. Therefore, Applicants respectfully submit that the rejection of Claims 1-18 under 35 U.S.C. §102(e) and §103(a) has been overcome.

Regarding the provisional rejection on the ground of non-statutory obviousness-type double patenting, Applicants respectfully submit that a terminal disclaimer can be filed, if the claims in the present application and the claims in the co-pending Application 10/665,155, co-pending Application 10/454,556, co-pending Application 10/944,614, and Sakai et al. remain obvious in view of each other at the time of allowance of either of these applications. Hence, Applicants respectfully request that the Examiner contact the undersigned should the present arguments be accepted and should the case be otherwise in a condition for allowance. At that time, a terminal disclaimer can be supplied to expedite issuance of this case.

Consequently, in view of the present amendment and in light of the above discussions, it is believed that the outstanding rejection has been overcome, and the application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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